

REMARKS

Claims 17, 19 and 20 are objected to because of certain informalities. These claims have been amended so that they have the correct dependencies as suggested by the Examiner. The claims presently pending are believed to be in compliance with 35 U.S.C. 112.

Claims 1, 2, 5, 8-15 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,753,911 to Yasuda et al. (“Yasuda”). Some of the rejected claims have been amended and the rejection is respectfully traversed in so far as it is applied to the claims as amended.

As amended, the rejected claims clearly distinguish from Yasuda. Thus, claim 1 has been amended to require that the first and the second plurality of fingers of the stator and rotor are substantially in a plane when no voltage is applied to the actuator, where such plane is transverse to the direction of the vertical force. In contrast, the corresponding elements (fingers 703, 706, and electrode 707) are not substantially in a plane. Furthermore, these elements are not in any plane that is transverse to the direction of the force exerted between the fixed electrodes 703 and the movable electrodes 706. Even if the fingers 703, 706 and electrode 707 can be said to be in a “plane,” such as a plane perpendicular to the surfaces of the fingers 703, 706 and electrode 707, the force between the fingers 703, 706 would be along a direction parallel to such plane and not transverse to it.

It is believed to be well settled that in order for a reference to anticipate a claim, there must be identity of elements between those of the reference and those of the rejected claim. Yasuda clearly fails this test, since it does not disclose the above described feature of the rejected claims. In view of the vast differences between the purpose, function and operation of the actuator of the rejected claims on the one hand and those of Yasuda on the other, it is further believed that the rejected claims are non-obvious over Yasuda, for reasons explained below.

The principle of operation of Yasuda’s device is of a parallel plate type electrostatic actuator, where the displacement of the moveable electrode is controlled by controlling the voltage between the fixed electrode 703 and the moveable electrode 707. The actuator of the rejected claims, on the other hand, operates on the principle that the electrostatic force generated by the actuator arises from the asymmetry in the electric field above and below the rotor finger (shown by lines 420 in Fig. 4 of this application). This so-called levitation force is quite different from the parallel plate attraction of Yasuda. The direction of the force (as illustrated by arrow 405 in Fig. 4) in one embodiment is parallel to the opposing rotor and stator surfaces, and

is perpendicular to the direction pointing from the rotor to the stator or from the stator to the rotor. In other words, the direction of the force generated by the actuator of the rejected claims, in some embodiments, are substantially perpendicular to the direction of the force generated by Yasuda's actuator. As a matter of fact, in the actuator of the rejected claims, it will be useful to cancel out any parallel plate type of attraction between the rotors and stators utilized by Yasuda, since this would cause undesirable in-plane motion. Therefore, it is believed that one skilled in the art would have no reason or motivation to alter Yasuda's device to arrive at the device of the rejected claims.

From the above, it is believed that the rejected claims 1, 2, 5, 8-15 are also non-obvious over Yasuda. These claims are therefore believed to be allowable.

In regard to claims 3, 4, 16-20, these claims are also believed to be allowable since they depend from allowable claim 1, since the additional references (U.S. Patent Nos. 6,539,137 to Moresco, U.S. Patent 6,236,096 to Chang, and U.S. Patent 6,538,284 to Riccobene) do not remedy the deficiencies of Yasuda discussed above.

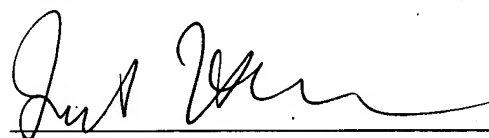
We note with appreciation the allowance of claims 27-42. We however disagree with the Examiner's reason for indication of allowability of these claims. Thus, claims 27 and 34 do not require that the insulating material of the rotor and stator be coplanar when no voltage is applied. This comment applies to claims 27, 34 and some of the claims dependant upon 27 and 34.

We also note with appreciation that claims 6 and 7 will be allowable if rewritten in independent form. This has not been done since the base claim upon which these claims depend is also believed to be allowable.

Claims 43-60 have been added to more completely claim the invention. For reasons similar to those explained above, these new claims are also believed to be allowable

Claims 1-20 and 27-60 are presently pending in the application. Reconsideration of the rejections is respectfully requested and an early indication of the allowability of all the claims is earnestly solicited.

Respectfully submitted,



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